Professor: David McClendon (2046 ASC, phone x2574 (231-591-2574 off campus), hours M 1-2, W 1-2, W 3-4 or by appointment, email: `mcclend2@ferris.edu`)

Lectures: TR 12:00-1:15 in STR 207.

Web: I maintain a personal web page at `http://mcclendonmath.com/324.html`; this page contains the lecture notes, links, handouts, etc.

Required Materials: 1. My lecture notes, which will be distributed in class (bring them every day).
2. The textbook *A Transition to Advanced Mathematics*, 8th ed. by Smith, Eggen and St. Andre (ISBN 9780495562023) (you do not need to bring this to class)

Recommended Materials: 1. Colored pens or pencils (for better note-taking).
2. A three-ring binder for the lecture notes and other handouts.

Prerequisite: Math 230 with a grade of C- or better. (You need this for the "mathematical maturity" moreso than the actual calculus.)

Course material: Logic, proof techniques, basic set theory, relations and functions, cardinality, and other fundamental mathematical concepts.

Learning outcomes: After completing Math 324, it is my hope and expectation that students will be able to:

1. demonstrate a thorough knowledge of propositional logic, numbers and operations;
2. demonstrate a thorough knowledge of set theory;
3. demonstrate a thorough knowledge of relations and functions;
4. demonstrate a thorough knowledge of the cardinality of sets;
5. formulate and evaluate conjectures; prove statements stemming from a variety of topics; contribute to group activities; critique classmates' written proofs and oral presentations.

Grading policy: Written work: 25%. Three midterms: 15% each. Final exam: 20%. Oral presentation: 6.666%. Attendance and class participation: 3.333%. Grades will be curved at the end of the semester, but an average of 90% guarantees you at least an A-, an average of 80% guarantees you at least a B-, etc.

Attendance policy: I have no formal attendance policy. That said, **nothing** is more correlated with strong performance in my classes than attendance in lectures.

Written work: There are four types of written work you will do in this class:

Homework to be turned in: Almost every class, I will distribute a (short) collection of problems that will be turned in and graded for correctness. This homework is usually due the following class period.

Recommended textbook exercises: Almost every class, there will be problems in the textbook which I recommend that you do. Although these problems will not be collected, it is important that you do all of them, to ensure mastery of the topics. Also, some exam problems may be similar in nature to the textbook exercises (perhaps they will be exactly the same).

Preview assignments: Sometimes, I will hand out an assignment that you must complete (and turn in) **before** we cover the material in class. These are designed to get you to think about the upcoming material and/or introduce simple ideas (so we don't have to spend time in class introducing them).

In-class activities: From time to time, you will work in groups in class on activities that help move us through the material. These activities facilitate mathematical exploration and require you to collaborate with your classmates in learning the material. To receive credit for these activities, you must be present on the days in class that we work on them. Your willingness to work actively with others on these assignments factors into your class participation grade.

Late work is not accepted in any of these categories, but I will accept papers until I go home on the day they are due. You may work with others on homework and preview assignments, but everyone needs to submit their own solutions.

How written work is graded: Each proof or problem solution in this course will be graded carefully in areas including, but not limited to:

- correct justification of reasoning;
- proper use of mathematics notation, symbols, syntax and language;
- correct proof formatting (spacing, indenting, alignment, paragraphs, etc.);
- precision and efficiency of language; and
- legibility.

The heart of this course is learning how to write mathematics arguments well. As such, I will be ~~rather picky~~ psychotically anal about the way I want you to write and/or present certain things. With time, you will get used to my standards (and hopefully come to appreciate them).

Redoing homework: In this course, I want you to become better at writing mathematical arguments. A key step in doing this is to recognize what you do wrong, and fix your errors. Toward this end, I will allow you to resubmit homework (not preview assignments or in-class work) and earn back half the points on each problem (rounded down) that you lost, subject to the following rules:

- The problem(s) redone must be **proofs** (i.e. the wording of the problem must be "Prove" or "Show that" or something equivalent).
- The original assignment must have been turned in on time, and some effort must have been made on any problems you are resubmitting.
- The redone assignment must be turned in within three business days of when the graded assignment is returned.
- You must resubmit your original assignment together with the redone assignment.
- You can only resubmit each assignment once.

Midterms: There are three midterm exams, tentatively scheduled for **Tuesday, September 26**, **Tuesday, October 31**, and **Thursday, December 7**. I have not decided on the exact format of the exams: they may be done entirely in class, or a mix of take-home and in-class questions. You will not be permitted to use a calculator, notes, or other study aids on any exam questions done in class.

You may make up an exam that you miss (whether your absence is excused or not) but the makeup exams are considerably more difficult. If you miss an exam, contact the professor; you are to make up the exam at the <u>earliest possible time</u>.

The midterms in this course are fairly cumulative, due to the nature of the subject matter.

Final exam: The final exam covers the entire semester, and will be held **Tuesday, December 12** at **12 PM** in the usual classroom. Check MyFSU to confirm this date and time.

Oral presentation: An important part of mathematics is communicating with your peers, not only in writing but in person. To give you experience with this, near the end of the semester each of you will make a 5-15 minute oral presentation of a proof (by yourself or in a pair) to your classmates. We will go over the details later in the semester, but here's how your score on the oral presentation will be determined:

- I will assess your presentation (60% of your presentation grade)
- Your peers will assess your presentation (20% of your presentation grade)
- I will assess how accurately you grade your peers (20% of your presentation grade)

Sample evaluation forms are distributed with this syllabus.

Getting help: The best place to receive help is my office. In class, I will not have time to take homework questions, and I will not be able to present all perspectives on a topic. In office hours, I am able to discuss the material at a much more friendly pace and offer some alternate viewpoints that may help you understand the material better.

If you cannot make my scheduled office hours, you can come talk to me anytime my office door is open. Also, I am more than happy to make an appointment to discuss the material with you. Send me an email.

Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements should register with the Educational Counseling and Disability Services office (x3057, `ecds@ferris.edu`). While ECDS will send me a letter outlining the accommodations to make for you, I would appreciate it if you could contact me immediately for assistance with any necessary classroom accommodations.

Academic dishonesty: Papers will be monitored for "magic answers". Issues with academic dishonesty are taken very seriously, will almost always result in an F for the class, and will be referred to the Office of Student Conduct.